Solve the problem with rogue ISP

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Mission

If you look on the outside, you will see that the task seems quite basic. I am upgrading an Internet LAN connection for a customer with a 1Gbit / sec Metro Ethernet link. Ethernet's response speed allows for a touch of intrusion detection system (IDS) priority for external routers. You can do this by connecting Metro Ethernet to a switch between the router outside the LAN boundary and Metro Ethernet drop, as shown in Figure 1.

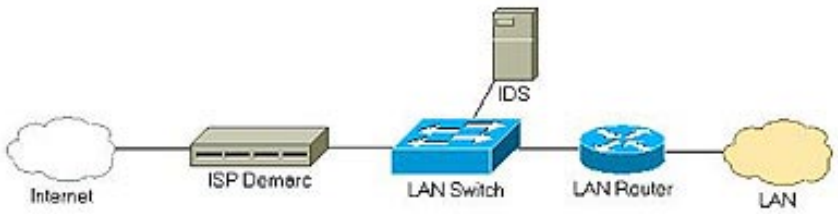

Figure 1: New link and IDS configuration (Ethernet connection to Internet service provider (ISP) allows to identify network attacks through a switch).

Problem

When connecting the switch to the ISP device via the fiber connector, you will see that only the device link to the ISP is bright, and the device to the LAN is not. Performing a connection check again gives the same results. Connection is not possible.

After contacting the ISP service provider for advice on appropriate settings, the problem lies with the LAN switchers. The switch on the LAN is automatically set up automatically to allow all Gigabit Ethernet ports to be used, but ISPs say their device cannot set up automatic sorting. They set themselves up to 1 Gbit / s, two-way

and don't automatically arrange. Therefore, you will have to configure the switch on the same LAN yourself.

You need to unify the settings with the service provider before making the connection. Write down the new configuration and restart the switch if it hasn't worked.

Starting point

My experience is that with a 100Mb / second paired network, you should disable automatic sorting and set the appropriate settings yourself. So the ISP's request seems to be understandable. But with Gigabit Ethernet connections you can do it all with automatic sorting end settings. Depending on the type of Ethernet you should allow this mode to be used or interrupted, as with 1Gb / sec mode, it is possible to operate; 100Mb / sec: should be disconnected; 10Mbit / sec: should upgrade.

I have contacted the LAN switch manufacturer to determine if the device is defective. I also asked ISPs to see if I should set the auto-arrange mode for the test. When they work, the interface comes close. So the simplest answer is to break this mode. However, ISPs say that because their network is designed to not allow use.

For ISPs, there are many questions about the rationale of connecting a switch to their device. They suspect whether the settings are properly configured on the LAN device. After the options have been set up in the device's operating system, I think those components work on each standard.

So which criteria are most clear and reasonable. The ISP realized that the problem was on the LAN. The LAN vendor indicated that the switch could actually set the auto-disconnect mode. It is time to apply the standards.

Section 37

The IEEE 802.3 standard covers all Ethernet networks. Specifically, 802.3z talks about the automatic sorting of Gigabit Ethernet. Like section 37 in 802.3, it is recommended to set the automatic sorting mode in the 1000BASE-X link.

'Should' does not mean 'Yes'. So at this point I turn to look for explanations of the standards. I didn't find much, but a few pages also helped me understand that automatic sorting is not recommended on any Gigabit Ethernet connection, even if it is connected to the media. The most specific with the experience of SunMicrosystem.

At this point, I'm convinced by the implementation of the ISP. At least it demonstrates the best practical steps, in accordance with the standards. I suspect ISPs have the same conclusion as installing a router directly between their device and the LAN switch to provide a quick fix as shown in Figure 2.

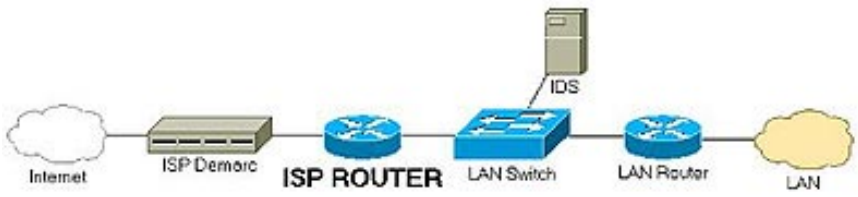

Figure 2. Add router directly ISP

ISP routers have two Gigabit interfaces: one that allows automatic sorting, and one that doesn't. The first interface connects to the LAN switch, the second interface connects to ISP devices. All links are connected and the problem is solved even though there is no answer to the question where it should be placed.

Epilogue

A short time later, the LAN switch manufacturer launched an official stance. Under its standard of understanding, the operation option with the self-aligning interrupt mechanism ensures consistency between the preferred manufacturing Gigabit components according to the '37th item' clause. This is overcome clearly in the master / slave relationship (main / sub). Devices that do not use the self-aligning mechanism will operate as a master. Devices using this mechanism will start the program arranged as a master. Therefore, two masters cannot 'communicate' with each other.

The LAN switch manufacturer says that while it is possible to write code that destroys this mechanism, its options are against the standard. Further research found an example of a clear fact that IEEE agreed that this explanation constitutes a requirement to change standards. The final decision of the manufacturer is to maintain a solid stance, a move I fully agree.

In addition to studying standards, I used to provide ISP locations and network devices according to 802.3z, which is much more flexible than traditional customers' prices.

In general, the standards for different components or a business, an Internet service provider (ISP) cannot dictate that Ethernet networks must be unified. It all depends on the sense of who installs, designs, manages and users, deriving from their own interests.